

COST– BENEFIT ANALYSIS

As per cost (Conservation) Rules 2003, Rules 6, Form 'A'. No. 1 (v) and guidelines– application of Forest Act 1980, Chapter II (2.6)] Evaluation of Loss of Forests Loss:

Sr. No.	Parameters	Description
1	Loss of value of timber fuel wood and minor forest produce on an annual basis, including loss of man hours per annum of people who derived livelihood and wages from the harvest of these commodities.	The area bears very poor tree growth and there is no felling of trees involved as well as no collection of Minor Forest produce in the area. Therefore, loss of value of timber and fuel wood per hectare negligible. Hence, question of harvesting of forest crop does not arise.
2	Loss of animal husbandry productivity, including loss of fodder.	The project is located in the drought prone area and soil is low fertile category. This condition offers great resistance to any natural vegetation including grass. Hence, the loss of animal husbandry productivity, including loss of fodder is very less almost negligible.
3	Cost of human resettlement	Since it is a green field alignment an exercise has been made to avoid any adverse impact on human settlements, therefore, impact is very low and there is no displacement of people. As such the loss on this account is 'NIL'
4	Loss of public facilities and administrative infrastructure (Roads, building, schools, dispensaries, electric lines, railways etc.) on forest land, or which would require forest land if these facilities were diverted due to the project.	Public facilities and administrative infrastructure like roads, buildings, schools, dispensaries, electric lines, railways etc. are not going to be affected due to the project and therefore the loss on this account will be 'NIL'

Sr. No.	Parameters	Description
5	Environmental losses: (soil erosion, effect on hydrological cycle, wildlife habitual, microclimate upsetting of ecological balance).	As a thumb rule the environmental value of one hectare of fully stocked forest (density 1.0) would be taken as Rs. 126 lacs to accrue over a period of 50 years. That means environmental value depends on the density of the forest and the area of the forest. The overall density of the proposed forest land of 0.1 to 0.4 of 166.485 ha. Majority of that is open land with scattered bushes which is below 0.4.
		<p>Hence the environmental loss for 166.485 ha over a period of 50 years works out as under:</p> <p>Environmental Loss for 50 years: $126 \times 0.4 \times 166.485 = 8537.4072 \text{ Lacs.}$</p> <p>Environmental Loss for 1 year: $\frac{8537.4072}{50} = 170.74 \text{ lacs}$</p> <p>Environmental Loss per year & per ha: $\frac{170.74}{166.485} = 1.008 \text{ lacs}$</p> <p>Therefore environmental loss per year per ha will be Rs.1.008 lacs.</p> <p>And Environment Loss for 30 years lease period will be $\text{Rs.} 1.008 \times 30 \text{ years} = 30.24 \text{ lacs}$ This is much less as compared to the benefits due to the project.</p>
6	Suffering to oustees	Since there are no oustees, because of the proposed project, the social cost of rehabilitation of oustees is NIL.

Therefore, the total loss of forest, as per the approved parameters, works out to as under:

Parameters No	Discription	Loss (in Lacs)
5	Environmental losses: (Soil erosion, effect on hydrological cycle, Wildlife habitat, microclimate upsetting of ecological balance	= 30.24



Maharashtra State Road Development
Corporation Limited
Executive Engineer, Package II,
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Evaluation of Benefit from Forests

Sr. No	Parameters	Description
1	Increase in productivity attributable to the specific project.	Implementation of entire project will ensure fast and safe road traffic movement, reducing travel time to half by achieving speed of 100km/hour for motor vehicles. Project also aims at creation of commercial nodes for multiple development mainly in industrial, commercial, agricultural, tourism sectors resulting in to employment generation, capacity building as well as connectivity between industrial places like Butibori, Amravati, Jalna, Chikalthana, Shendra, Waluj, Sinnar to Mumbai, and tourist and religious places at Karanja, Lonar, Sindkhedraja, Verul, Shirdi.
2	Benefits to economy	Due to the proposed project 40% travel time will be saved, Fuel and maintenance of vehicles will be reduced at about 35%. It will provide safe and faster transport link between important cities like Aurangabad, Nagpur, and Mumbai and serve better connectivity to Industrial growth center. Traffic and Tourism of area will be uplifted approximately 20%. The above benefit in term of rupees is about 350.00 lacs
3	No. of population benefited	Entire population of the project corridor and proposed growth center area will be benefited due to construction of this expressway. The above benefit in term of rupees is about 250.00 lacs

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4	Employment potential	<p>More local people will be benefited during construction as well as operation of this expressway and construction of various 8 node along the corridor</p> <p>Rs.2.76Crores through employment generations as under:</p> <table><tr><td></td><td>During Construction</td><td>During Maintenance</td></tr><tr><td>Skilled</td><td>4375</td><td>2625</td></tr><tr><td>Semiskilled</td><td>7000</td><td>5250</td></tr><tr><td>Unskilled</td><td>26250</td><td>7000</td></tr><tr><td>Total</td><td>37625</td><td>14875</td></tr></table> <p>This further per hector per year out as under:</p> <p>a) <i>During construction:</i></p> <table><tr><td></td><td>Person required</td><td>Rate</td><td>Amount</td></tr><tr><td>Skilled</td><td>4375</td><td>1000</td><td>43,75,000</td></tr><tr><td>Semiskilled</td><td>7000</td><td>600</td><td>42,00,000</td></tr><tr><td>Unskilled</td><td>26250</td><td>400</td><td>1,05,00,000</td></tr><tr><td>Total</td><td>37625</td><td></td><td>1,90,75,000</td></tr></table> <p>b) <i>During maintenance:</i></p> <table><tr><td></td><td>Person required</td><td>Rate</td><td>Amount</td></tr><tr><td>Skilled</td><td>2625</td><td>1000</td><td>26,25,000</td></tr><tr><td>Semiskilled</td><td>5250</td><td>600</td><td>31,50,000</td></tr><tr><td>Unskilled</td><td>7000</td><td>400</td><td>28,00,000</td></tr><tr><td>Total</td><td>14875</td><td></td><td>85,75,000</td></tr></table> <p>Total cost of (a + b) works out to Rs. 2, 76, 50, 000 per year for 166.485 Ha. This cost works out per hector per year Rs. 163229.885/- i.e. 1.63 lacs</p>		During Construction	During Maintenance	Skilled	4375	2625	Semiskilled	7000	5250	Unskilled	26250	7000	Total	37625	14875		Person required	Rate	Amount	Skilled	4375	1000	43,75,000	Semiskilled	7000	600	42,00,000	Unskilled	26250	400	1,05,00,000	Total	37625		1,90,75,000		Person required	Rate	Amount	Skilled	2625	1000	26,25,000	Semiskilled	5250	600	31,50,000	Unskilled	7000	400	28,00,000	Total	14875		85,75,000
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5	Cost of acquisition of facility on non-forest land wherever feasible	As against 166.485 ha of forest land proposed to be diverted non-forest land and will be transferred in the name of MSRDC for development of Nagpur-Mumbai Expressway by the Collector (Government land)																																																							

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6	Loss of (a) agriculture and (b) Animal husbandry production due to diversion of forest land.	a) Loss of agriculture–NIL b) Loss of animal husbandry will be Nil.																		
7	Cost of rehabilitating The displaced persons as different from compensatory amounts given for displacement.	Since there is no displacement of persons due to the proposed Project, the cost of rehabilitation is NIL.																		
8	Cost of supply of free Fuel -Wood to workers residing in or near forest area during the period of construction.	No workers will be allowed to live in Forest area and also use forest products for fuel and others																		
A	Total benefits as per above parameters are <table><thead><tr><th>Parameters</th><th>Amount (in lacs)</th></tr></thead><tbody><tr><td>1. Benefit to economy</td><td>350.00</td></tr><tr><td>2. Population benefit</td><td>250.00</td></tr><tr><td>3. Employment potential</td><td>001.63</td></tr><tr><td>4. Cost of acquisition of facility on non-forest land wherever feasible</td><td>-</td></tr><tr><td>5. Loss of (a) agriculture and (b) animal husbandry production due to diversion of forest land.</td><td>-</td></tr><tr><td>6. Cost of supply of free fuel-wood to workers residing in or near Forest area during the period of construction.</td><td>-</td></tr><tr><td></td><td>-----</td></tr><tr><td></td><td>601.63</td></tr></tbody></table>		Parameters	Amount (in lacs)	1. Benefit to economy	350.00	2. Population benefit	250.00	3. Employment potential	001.63	4. Cost of acquisition of facility on non-forest land wherever feasible	-	5. Loss of (a) agriculture and (b) animal husbandry production due to diversion of forest land.	-	6. Cost of supply of free fuel-wood to workers residing in or near Forest area during the period of construction.	-		-----		601.63
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	<p>Total loss of forest as per parameters are</p> <p>Therefore, the total loss of forest, as per the approved parameters works out to as under:</p> <table><thead><tr><th>Parameters No.</th><th>Loss (in Rs)</th></tr></thead><tbody><tr><td>5. Environmental losses: (Soil erosion, effect on hydrological cycle, wildlife habitat, microclimate upsetting of ecological balance</td><td>30.24</td></tr></tbody></table> <p>Therefore benefits/cost ratio works out as under :</p> <table><tbody><tr><td>Benefit</td><td>601.63</td><td></td><td></td><td></td></tr><tr><td>-----</td><td>=</td><td>-----</td><td>=</td><td>19.89 or Say 20</td></tr><tr><td>Cost</td><td></td><td>30.24</td><td></td><td></td></tr></tbody></table> <p>Cost Benefit Ratio: 1:20</p>		Parameters No.	Loss (in Rs)	5. Environmental losses: (Soil erosion, effect on hydrological cycle, wildlife habitat, microclimate upsetting of ecological balance	30.24	Benefit	601.63				-----	=	-----	=	19.89 or Say 20	Cost		30.24		
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Note: While calculating cost ratio as above, only parameters of evaluation of loss of forests and parameters of evaluation of benefits approved by the government of India in the guidelines Chapter II (2.6) are taken into consideration. Other costs such as project cost, cost of compensatory afforestation, cost of medicinal plant garden, net present value, lease rental etc. are not considered.



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